

armature coil and said rotor in accordance with a detected result of said rotor position detecting means, the brushless motor comprising:

a field magneton including a plurality of permanent magnets provided in said rotor and disposing the poles in one direction, and a plurality of control poles made of a magnetic material and arranged between said permanent magnets;

a field coil forming a closed magnetic path passing through said control poles; and

a motor characteristic control means for changing a motor characteristic by controlling at least one of a direction and an amount of current flowing into said field coil, by changing a magnetic flux that said field coil generates, and by controlling an effective magnetic flux affected between said rotor and said stator.

Claim 2

2. (Amended) A brushless motor having a stator constituted such that an armature coil is wound around a stator core having a gap at a central portion thereof; a rotor made of a magnetic material and including a bottomed cylindrical yoke rotatably arranged outside said stator; a rotor position detecting means for detecting a position of said rotor; and a current control means for making a current flowing into said armature coil such that a rotating magnetic field is formed between said armature coil and said rotor in accordance with a detected result of said rotor position detecting means, the brushless motor comprising:

a field magneton including a plurality of permanent magnets provided in said rotor and disposing the poles in one direction, and a plurality of control poles made of a magnetic material and arranged between said permanent magnets;

a rotor boss made of a magnetic material, provided at the central portion of said rotor to project along an axial direction thereof, and arranged in said gap of said stator so as to have an air gap between said stator and the rotor boss;

a field coil arranged in said stator so as to face a bottom portion of said yoke in a state of being wound in a surrounding direction of said rotor boss, and forming a closed magnetic path passing through said rotor boss, said yoke, said control poles and said stator core; and

a motor characteristic control means for changing a motor characteristic by controlling at least one of a direction and an amount of current flowing into said field coil, by changing a magnetic flux that said field coil generates, and by controlling an effective magnetic flux affected between said rotor and said stator.

Claim 3

3. (Amended) A brushless motor having a stator including a stator core around which an armature coil is wound, and a bracket which holds said stator core and is made of a magnetic material; a rotor made of a magnetic material and including a rotor core rotatably arranged inside said stator; a rotor position detecting means for detecting a position of said rotor; and a current control means for making a current flowing into said armature coil such that a rotating magnetic field is formed between said armature coil and said rotor in accordance with a detected result of said rotor position detecting means, the brushless motor comprising:

a field magneton including a plurality of permanent magnets provided in said rotor and disposing the poles in one direction, and a plurality of control poles made of a magnetic material and arranged between said permanent magnets;

a magnetic path forming member made of a magnetic material, projected from said rotor core along a diametrical direction thereof, and arranged so as to have an air gap in the space of the stator with a gap between the stator and the magnetic path forming member;

a field coil arranged in a side of said stator in a state of being wound in a surrounding direction of said rotor core, and forming a closed magnetic path passing through said rotor core, said control poles, said stator core, said bracket and said magnetic path forming member; and

a motor characteristic control means for changing a motor characteristic by controlling at least one of a direction and an amount of current flowing into said field coil, by changing a magnetic flux that said field coil generates, and by controlling an effective magnetic flux affected between said rotor and said stator.